IMPROVED PROCEDURE IN CONSTRUCTION OF HIGH SPEED WINDPROOF HOUSES

RELATED U.S. APPLICATIONS

Not applicable.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable.

REFERENCE TO MICROFICHE APPENDIX

Not applicable.

FIELD OF THE INVENTION

[0001] A novel procedure in constructing houses is presented with the particular characteristic projected efficiently to support the loads generated by high speed winds as the ones in the atmospheric phenomenon denominated TORNADO.

[0002] Particularly, the construction of the structure or the fuselage of the house uses a tightened metallic profile, the reason for the request of the Mexican patent PA/a/2002/01170 with the name of "Tightened Channeled Profile" the holder being the inventor of the present invention, and of the use of construction methods in tightening lamina covers.

[0003] The mechanical and structural characteristics of the houses built using these steel profiles are superior to the traditional system.

[0004] Therefore, the scope of the invention is subscribed to the universe of the structural profiles used for metallic constructions.

BACKGROUND OF THE INVENTION

[0005] During the centuries, man used the materials around him to multiply his physical capacities as well as to defend himself from the devastating forces that accompany the natural phenomena.

[0006] One of these most destructive natural phenomena known nowadays are the so-called tornados, caused by jet streams of air of different densities and temperatures. At present there are many places on earth where these phenomena develop and the American Society Federal Emergency Management Agency has classified them in four types according to the wind speed: Light when the speed does not exceed 130 miles per hour, Medium up to 160 miles per hour, (256 kilometers p/h), High up to 200 miles per hour (320 kilometers p/h) and Extreme more than 250 miles per hour (400 kilometers p/h).

[0007] The way to defend oneself from such a phenomenon is reaching a refuge built for such a happening, such as the cellar of the house, an underground construction in another place or a bunker. With such a protection the physical integrity of the persons is preserved, but not their houses and belongings.

[0008] It is necessary to take into consideration, besides those already mentioned in the request, the circumstance that, for the stability of this prototype house, it must be insured that the suction generated by the high speed winds of the tornado, will be in anyway equilibrated. That is to say, the foundation is not held in the common way with the gravitational loads of the buildings. In this case,

the equilibrium is obtained with the construction's own load, plus the foundation's load and with the earth from the excavations. The foundation will be special to equilibrate the suction generated by a TORNADO.

BRIEF SUMMARY OF THE INVENTION

[0009] A novel procedure in construction houses is presented with the particular characteristic of being projected to support efficiently the loads generated by high speed winds as the ones in the atmospheric phenomenon denominated TORNADO.

[0010] The procedure steps can be summarized as follows: a first step consists of constructing the structure of a prototype house, formed by columns, joists, skids and crosspieces, using the above mentioned profile, and where the joist joint with the different columns, is made by means of joint plates and screws, type Grade 5. Besides, the joist joint that intercross is made by screws and where the joist joint and columns do not intercross, they are united by terminal plates, consisting of a steel plate that is welded in the joist closings, held the whole united by means of screws.

[0011] A second step consists of the covering of the structure with steel lamina, forming a fuselage of the house, a showier final effect, then a covering in the interior with hard tongued and grooved wood that integrates structurally to the fuselage of the house, standing out from the steel laminas joint with the profile of the column, by means of welding or glue or with self-threading screws meanwhile, the union of a steel lamina with the profile of the skids is done by means of self-threading screws, or glue.

[0012] A third step consists of setting the closings of the structure, that will serve to diminish and divert the currents of the wind shock, formed by some curved pieces, that will be set in the place where the edge of the crossings of the flat surfaces of the covering and walls would be.

[0013] Therefore, the range of the invention is subscribed to the universe of the structural profiles used for metallic constructions.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0014] Figure 1 is a perspective showing the transversal section of the profile used in the construction of the structure of a house;

[0015] Figure 2, is a perspective of a section of the type of structure of the house;

[0016] Figures 3 & 4, are perspectives showing the detail of the union of joists with columns;

[0017] Figures 5 y 6, are perspectives showing the detail of the type of the union of joists with the skids;

[0018] Figures 7 y 8, are perspectives showing the detail of the union of the crosspieces with the columns;

[0019] Figure 9, is a perspective showing the union of the lamina with a column;

[0020] Figures 10 y 11, are perspectives showing the way to cover the skids and crosspieces with a steel lamina;

[0021] Figure 12, is a view of the closing moldings in the cross between the covering and the external sidewalls;

[0022] Figure 13, is a horizontal view of the molding that ends the cross of two lateral lower walls;

[0023] Figure 14, is a perspective of the molding that ends the vertex formed in the union of two external walls and the covering.

DETAILED DESCRIPTION OF THE INVENTION

[0024] In reference to the recounting of drawings and following the same signals, the structure of the house comprises the use of a profile which we will call MZ stiffened of high resistance, similar to type Mon-Ten, also the patent claimer's invention, rolling the lamina in cold and with the drawing formed by skates, a core and some endings, being the core as well as the closings stiffened, in order to obtain that all the section is an effective area and at the same time, obtaining with those stiffenings, in a safe and efficient way the fixation of the steel lamina that further on is used, with which efficiently supports the loads and efforts provoked by the wind at a high speed.

[0025] The construction procedure of this prototype house, according to the architectural drawing, can vary; nevertheless, three fundamental steps result.

[0026] A first step consists of constructing a structure of a house, that integrates the main structure, as can be appreciated in figure 2 to set it up on a piece of land.

[0027] That is to say that when there is the architectural drawing of a house, the next step is the lifting of the structure formed by columns 10, joists 20, skids 30 and crosspieces 40, using the above mentioned profile and whose form is presented in figure 1.

[0028] The union of joists 20 with the different columns 10 is done efficiently by means of union plate's 50 and screws. These union plates 50, are flat steel lamina plates and the screws are calculated

and designed to support loads generated by winds up to 250 miles per hour, (400 km/hr) choosing special steel screws type Grade 5.

[0029] The union of joists 20 and the skids 30 that intercross as in figures 5 & 6, are done by terminal plates 52 and by steel screws grade 5.

[0030] The crosspieces 40 and the columns 10 are united by means of terminal plates 52, consisting of a steel plate that is united by means of welding in the crosspieces closings 40, leaving the whole united by means of steel screws grade 5, as shown in figures 7 & 8.

[0031] A second step consists of covering the structure with steel lamina 60, forming a fuselage of the house. In order to obtain a showier final effect, a hard wooden covering is made for the interior part, and the internal walls of the rooms are covered with hard tongued and grooved wood on both facings.

[0032] Figure 9 shows a way of uniting steel laminas 60 with the profile of the column 10, by means of welding or gluing or with self-threading screws along the steel lamina 60.

[0033] Figures 10 & 11, show the union of a steel lamina 60 with the profile of the skids 30 and the crosspieces 40 which can be united by means of screws, or glue, or welding, obtaining in such a way a fuselage of the structure, of a sole body and at the same time a capacity to support the loads and efforts of the wind.

[0034] A third step consists of setting the closings or moldings 70 of the structure, that will be used to diminish and to divert the currents of the wind shock, formed by a piece set up in each corner of the joists 20 and columns 10, this piece with round edges so when the wind flow crashes, the wind deviates and at the same time its speed is diminished.

[0035] THE BEST WAY TO CARRY OUT THE INVENTION

[0036] Once the architectural drawing is done, the next step is the lifting of the structure or fuselage, formed by columns 10, joists 20, skids 30 and crosspieces 40, keeping the fixing of the drawing, that can vary according to the architectural characteristics.

[0037] The results of the behavior of the profile of the present invention compared to the profile type *Mon-Ten* can be summarized as follows:

20.0 cm profile (8 inches) caliber 10

Maximum working stress of the proposed profile 2109 Kg/cm^2

Maximum working stress of the proposed profile Mon-Ten 1265 Kg/cm^2

Profile	Inertia moment S_X (cm^3)	Weight kg/m	Resistance moment Kg/ m	Efficiency per kg Kg m/kg
Proposed	92,188	11,93	1944	163
Mon-ten	79,15	10,37	1001	96,5

Connection between the behaviors of bother profiles: 163 x 100/96.5 = 169%

[0038] That is to say, the propose profile has an efficiency one and half times more in relation to profile Mon-Ten.

20.0 cm profile (8 inches) caliber 14

Profile	Inertia moment S_X (cm^3)	Weight kg/m	Resistance moment kg m	Efficiency per kg Kg m/kg
Proposed	49,569	6,75	1045	154,8
Mon-ten	45,23	5,79	572	98,8

Connection between the behaviors of both profiles: 154.8 x 100/98.8 = 157%

[0039] That is to say, the proposed profile has an efficiency one and a half times more in relation to profile Mon-Ten.